



FANUC LEVEL 2

PROGRAMMING AND TROUBLESHOOTING

INTENDED AUDIENCE

Journeymen, ECTs, supervisors, and engineers who have received FANUC Level 1 training or have experience working with FANUC robots on a regular basis.

COURSE DESCRIPTION

This course is designed to ensure students with experience with the FANUC robot learn to safely recover the robot in various automated environments and situations with minimal downtime. All Level 1 concepts, teach pendant navigation, and skills will be revisited as part of this course.

In-depth, hands-on exercises will be used to teach students the advanced skills necessary to quickly determine the correct course of action to eliminate the need for timely program touch-ups. Core robotic concepts such as coordinate systems, tool center point adjustments after crashes, and understanding user frames will be covered. Advanced programming instructions and I/O will be covered for troubleshooting purposes.

Each lesson will build on previously learned skills, culminating in a final project that incorporates all skills learned during the class, with troubleshooting covered throughout.

2026 LEVEL 2 CLASS SCHEDULE

Start Date	End Date	Location	Seats Open	Duration	Language
5-11	5-15	Michigan, USA	7	5 Days	English
6-22	6-26	Michigan, USA	7	5 Days	English
9-14	9-18	Michigan, USA	6	5 Days	English
11-16	11-20	Michigan, USA	8	5 Days	English
12-07	12-11	Michigan, USA	8	5 Days	English

Course applies to: R-J3, R-J3i, R-J3iB, R-30iA, R-30iB, R-30iB Plus robot controllers.



STUDENTS WILL LEARN TO

- Safely recover the robot and recognize dangers when repairing specific robot components.
- Properly resume production after the robot has DCS alarms.
- Review critical teach pendant screens and teach pendant navigation for troubleshooting.
- Identify robot controller and robot arm components and understand their functions.
- Quickly recover the robot system using various methods based on common faults.
- Test cycle robot programs and optimize motion for less cable wear and improved cycle time.
- Select and cycle both programs and macros, as well as understand program flow when macros are cycled.
- Apply collision guard recovery and tuning to minimize tooling damage.
- Set up the TCP, verify the correct TCP, and adjust the TCP to eliminate unnecessary point touch-up after minor collisions with tooling.
- Set up and understand the function of user frames as they relate to programmed positions.
- Apply the use and function of position, tool, and position register offset instructions.
- Implement advanced program instructions encountered in the plant.
- Troubleshoot program stoppages when waiting on signals.
- Troubleshoot I/O networks and understand scanner/adaptor relationships.
- Apply root cause troubleshooting and robot recovery methods to minimize positional and program changes, and to eliminate unnecessary downtime when touch-up to program positional data is not warranted.
- Take precautions when preventative maintenance is performed, such as oil and grease changes.
- Know when to schedule PMs, make backups, and change batteries.
- Make Image and Back Up All backups of robot programs and system software.

TOPICS COVERED

- Robot Safety
- Electrical Components and Safety
- DCS Safety and Recovery
- Systems Components and Function
- Advanced Teach Pendant Navigation
- Program Selection and Cycling of Programs
- Copy and Modification of Programs
- Coordinate System Selection and User Frames
- Fault Recovery, Alarm Diagnostics, and Status Screens
- Position Screen and Coordinate System Selection
- Collision Settings and Recovery
- Understanding Program Flow
- Macros and Manual Functions
- Advanced Program Instructions
- I/O Instructions and Troubleshooting
- Tool Center Point Verification
- Preventative Maintenance Overview
- Tool Center Point Tuning After Minor Tooling Crashes

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